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IS 719 (1990): antifriction bearing grease (superseding IS : 1276 : 1958) [PCD 3: Petroleum, Lubricants and their Related Products]

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IS 719 : 1990
(Reaffirmed 2002)

Indian Standard

ANTIFRICTION BEARING GREASES — SPECIFICATION

(Second Revision)

भारतीय मानक

घर्षण रोधी बेयरिंग ग्रीसें — विशिष्टि

(दूसरा पुनरीक्षण)

UDC 621·892 : 621·822

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NEW DELHI 110002

September 1990

Price Group 1

Lubricants and Related Products Sectional Committee, PCD 4, and
Greases Subcommittee, PCD 4 : 7

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on 20 March 1990, after the draft finalized by the Lubricants and Related Products Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

Specification for greases Sl No. 1 (IS 719 : 1955) and specification for greases Sl No. 2 (IS 1276 : 1958) were first published in 1955 and 1958, respectively. As a result of review of these standards during the year 1974 these standards were amalgamated and published as IS 719 : 1974.

In the light of the request received from various organisations to have a suitable specification for grease for ball and roller bearings lubrication, for which generally an industrial grease of NLGI No. 3 consistency is recommended, it was decided to revise this standard with the inclusion of NLGI No. 3 grade in it in order to meet the requirements of *heavy industry, such as Steel industries.* It is hoped that this draft revision will facilitate the supply of quality product to various user industries. In this second revision the various requirements have been modified as per the decision taken by the Greases Subcommittee and also to reflect the improved quality of material now generally available in the country.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ANTIFRICTION BEARING GREASES — SPECIFICATION

(Second Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the method of sampling and tests for grease intended for antifriction bearings, such as ball, roller and needle bearings.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	*Title*
1447 : 1966	Methods of sampling of petroleum and its products
1448	Methods of tests for petroleum and its products

3 GRADES

3.1 The material shall be of the following three grades:

Grade 1 — Intended for use as a lubricant in high speed ball bearings and optical and fire control instruments.

Grade 2 — Intended for use as a lubricant in antifriction bearings where the bearing is not likely to come in contact with water and where temperatue and speed involved precludes the use of Calcium base greases.

Grade 3 — Intended for use as a general purpose lubricant for equipments, such as electric motors, blowers, fans, packed bearings, etc.

4 REQUIREMENTS

4.1 General Requirements

4.1.1 The material shall be short fibre homogeneous grease, free from visible impurities and objectionable odour and shall not show any signs of break down, hardening or tendency of the constituents to separate.

4.1.2 The material shall be free from mineral acid, rosin, rosin oil, rosinates, tar oil, grit or fillers and other impurities or deleterious materials.

4.2 Detailed Requirements

The material shall also comply with the requirements given in Table 1, when tested according to the methods given in 'P' series of IS 1448. Reference to the relevant methods of tests is given in col 6 of Table 1.

4.3 Composition

The material shall consist of the following ingredients:

a) *The mineral lubricating oil* extracted from the grease by method 'A' prescribed in P : 59 of IS 1448 shall comply with the requirements given in Table 2.

b) *Soap* — A suitable soap may be used but the type of the soap used in the preparation shall be declared.

c) *Antioxidants*

5 KEEPING PROPERTIES

5.1 The material when stored in original sealed containers under normal temperature conditions in shade shall retain the properties described under **4** for a period of not less than one year after the date of delivery.

6 PACKING AND MARKING

6.1 Packing

The grease shall be supplied in sound, clean and dry metal containers or other suitable packages.

6.2 Marking

The containers shall be securely closed and marked with the name and grade of the material and the year of manufacture.

6.2.1 The container may also be marked with the Standard Mark, details of which can be obtained from the Bureau of Indian Standards.

7 SAMPLING

7.1 Representative samples of the material shall be drawn as prescribed in IS 1447 : 1966.

Table 1 Requirements for Antifriction Bearing Greases

(*Clause* 4.2)

Sl No.	Characteristic	Requirement			Method of Test, Ref to 'P' Method of IS 1448
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Consistency of the worked grease at 25 ± 0·5°C				P : 60
	a) 60 Double strokes	310-340	265-295	220-250	
	b) 100 000 Strokes	Difference between 100 000 strokes and 60 strokes 50 units, *Max*			
ii)	Drop point, °C, *Min*	180	180	180	P : 52
iii)	Free acidity (as oleic acid), percent by mass, *Max*	0·3	0·3	0·2	P : 53
iv)	Free alkalinity expressed as sodium hydroxide (NaOH), percent by mass, *Max*	0·3	0·3	0·2	P : 53
v)	Evaporation loss, percent by mass, *Max*	2·0	2·0	1·0	P : 61
vi)	Corrosion (copper strip), at 100°C for 24 h	Negative	Negative	Negative	P : 51
vii)	Oxidation stability (100 h), drop in pressure, kgf/cm^2, *Max*	0·7	0·7	0·7	P : 94
viii)	Oil separated from lubricating grease during storage, percent by mass, *Max*	5·0	5·0	5·0	P : 85
ix)	Thermal stability, percent loss in mass, *Max*	—	5·0	5·0	P : 89
x)	Leakage and deposit forming tendencies (wheel bearing test)				P : *
	a) Leakage by mass, *Max*	10 g	10 g	10 g	
	b) Deposit in the wheel bearing races or the rollers	Shall be free from any deposits			
	c) Evidence of abnormal changes in the consistency or structure of the material	Not limited but the observations are to be reported			
	d) Indication of dry running of races	do			
xi)	Roll stability test, percent change in penetration, *Max*				P : †
	After 2 h	—	—	10	
	After 16 h	—	—	25	

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*Under preparation. Till such time ASTM D 1263-61 (81) may be followed.

†Under preparation. Till such time ASTM D 1831-64 (78) may be followed.

Table 2 Requirements for the Mineral Lubricating Oil Extracted from the Grease

[*Clause* 4.3(a)]

Sl No.	Characteristic	Requirement			Method of Test, Ref to 'P' Method of IS 1448
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Kinematic viscosity, cSt, at 40°C	28·8 to 35·2	28·8 to 35·2	90·0 to 110	P : 25
ii)	Flash point, Cleaveland open cup, °C. *Min*	160	160	170	P : 69

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